

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) An electronic paper printing system for describing display patterns on electronic paper, comprising:

an electronic paper having a plurality of capsules inside of which charged particles move, whereby colors are changed and display patterns are displayed; and

a drum shaped head for describing display patterns on said electronic paper, ~~a portion of said head has a curved shape with~~ and a plurality of pixel electrodes formed on a curved part of a surface of said head;

said plurality of pixel electrodes being two-dimensionally arranged on the curved part and actuated independently to form electric fields, said electric fields being applied to said electronic paper; wherein:

said charged particles inside said capsules are caused to move by applying the electric field to said electronic paper; and

said portion of said head contacts said electronic paper.

2. (Previously Presented) The electronic paper printing system according to Claim 1, wherein said head is configured by at least a pair of drums.

3. (Previously Presented) The electronic paper printing system according to Claim 2, wherein at least one drum of said pair of drums has, on an outer

circumferential surface thereof, the plurality of pixel electrodes that form electric fields that are applied to said electronic paper.

4. (Previously Presented) The electronic paper printing system according to Claim 2, wherein one drum of said pair of drums has, on an outer circumferential surface thereof, the plurality of pixel electrodes that form electric fields that are applied to said electronic paper, and another drum thereof has, on outer circumferential surface thereof, a common electrode that forms said electric together with said pixel electrodes.

5. (Previously Presented) The electronic paper printing system according to Claim 3, wherein said plurality of pixel electrodes is deployed in a matrix arrangement.

6. (Previously Presented) The electronic paper printing system according to Claim 3, having a plurality of switching elements that can switch between forming and extinguishing the electric fields produced by the plurality of pixel electrodes.

7. (Previously Presented) The electronic paper printing system according to Claim 6, wherein said switching elements are thin film transistors.

8. (Currently Amended) An electronic paper printing system for describing display patterns on electronic paper, comprising:

an electronic paper having a plurality of capsules inside of which charged particles move, whereby colors are changed and display patterns are displayed; and

a drum-shaped head for describing display patterns on said electronic paper, wherein:

said drum-shaped head having ~~on a curved part of~~ on an outer circumferential surface of said head, a plurality of pixel electrodes two-dimensionally arranged on the curved part and actuated independently to forming electric fields applied to said electronic paper;

said charged particles inside said capsules are caused to move by applying said electric field to said electronic paper; and

configuration is such that said display patterns are described by patterns applied from said head to said electronic paper.

9. (Previously Presented) The electronic paper printing system according to Claim 8, wherein said head has an erasing head for erasing display patterns described on said electronic paper and a describing head for describing display patterns on said electronic paper.

10. (Cancelled)

11. (Currently Amended) An electronic paper printing system for describing display patterns on electronic paper, comprising:

an electronic paper having a plurality of capsules inside of which charged particles move, whereby colors are changed and display patterns are displayed;

a drum shaped describing head describing display patterns on said electronic paper, said describing head having, on a curved part of an outer circumferential surface of said describing head, a plurality of pixel electrodes two-dimensionally arranged on the curved part and actuated independently to forming electric fields applied to said electronic paper; and

an erasing head for erasing display patterns described on said electronic paper; wherein:

at least one of a portion or portions of said describing head and/or a portion of said erasing head that contacts said electronic paper ~~are given a~~ includes the curved shape part.

12. (Cancelled)

13. (Currently Amended) The electronic paper printing system according to Claim 11, wherein at least one ~~head~~ of said describing head and said erasing head is configured by a pair of drums.

14. (Previously Presented) The electronic paper printing system according to Claim 13, wherein at least one drum of said pair of drums has, on an outer circumferential surface thereof, said plurality of pixel electrodes.

15. (Currently Amended) The electronic paper printing system according to Claim 13, wherein one drum of said pair of drums has, on an outer circumferential surface thereof, said plurality of pixel electrodes, and the ~~another~~ drum thereof has, on an outer circumferential surface thereof, a common electrode that forms said electric fields together with said pixel electrodes.

16. (Previously Presented) The electronic paper printing system according to Claim 14, wherein said plurality of pixel electrodes is deployed in a matrix arrangement.

17. (Previously Presented) The electronic paper printing system according to Claim 14, having a plurality of switching elements that can switch between forming and extinguishing said electric fields produced by said plurality of pixel electrodes.

18. (Previously Presented) The electronic paper printing system according to Claim 17, wherein said switching elements are thin film transistors.

19. - 26. (Cancelled)

27. (Currently Amended) An electronic paper printing device which writes a pattern on an electronic paper with an electric field, comprising:

a head placed in a position so that the head forms the electric field towards the electronic paper; and

a plurality of pixels formed on a curved part of a surface of the head,

wherein said plurality of pixels are two-dimensionally arranged on the curved part
and actuated independently ~~the head includes a curved part on a surface of the head.~~

28. (Original) The printing device of Claim 27, further comprising a first rotary drum, wherein a surface of the drum forms the curved part.

29. (Original) The printing device of Claim 28, wherein each of the pixels independently forms an electric field while the first rotary drum is rotating.

30. (Original) The printing device of Claim 29, further comprising a plurality of first electrodes, each of the first electrodes corresponding to a respective pixel.

31. (Original) The printing device of Claim 30, further comprising a second electrode opposing the first drum, the electric field being formed therebetween.

32. (Original) The printing device of Claim 32, further comprising a second rotary drum, wherein the second electrode is formed on the second rotary drum.

33. (Original) The printing device of Claim 30, further comprising a plurality of switching elements, each of the switching elements corresponding to a respective pixel.

34. (Currently Amended) An electronic paper printing device which writes a pattern of an electronic paper with an electric field, comprising:

a first rotary drum; and

a second rotary drum opposing the first rotary drum,

wherein at least one of the first rotary drum and the second rotary drum includes a plurality of pixels formed on a curved part of a surface of the at least one rotary drum, and each of the pixels are two-dimensionally arranged and actuated independently to form[[s]] an electric field while both the first and second rotary drums are rotating.

35. (Original) The printing device of Claim 34, further comprising a mechanism for rotating at least one of the first rotary drum and the second rotary drum in a direction, the direction being opposite to a direction in which the other rotary drum rotates.

36. (Original) The printing device of Claim 35, further comprising a plurality of switching elements, each of the switching elements corresponding to a respective pixel.

37. (Currently Amended) A printing device which writes a pattern on an electronic paper with an electric field, comprising:

a first head that forms a first electric field, wherein the first electric field resets a pre-written pattern on the electronic paper; and

a second head that forms a second electric field, wherein the second electric field writes a pattern on the electronic paper; and

a plurality of pixels formed on a curved part of a surface of the at least one of the first and the second head, each of the pixels being two-dimensionally arranged on the curved part and actuated independently to forming at least one of the first and the second electric fields.

38. (Original) The printing device of Claim 37, wherein the one of the first and the second heads comprises a plurality of electrodes, and each of the electrodes corresponds to a respective pixel.

39. (Original) The printing device of Claim 38, wherein the one of the first head and the second head includes a first rotary drum on which the plurality of electrodes are formed.

40. (Original) The printing device of Claim 39, wherein the other of the first head and the second head includes a second rotary drum.

41. (Original) The printing device of Claim 37, further comprising a plurality of switching elements, each of the switching elements corresponding to a respective pixel.

42. (Currently Amended) A method for writing a pattern on an electronic paper with an electric field, comprising:

providing an electronic paper,
rotating a first rotary drum on the electronic paper; and
applying the electric field towards the electronic paper while the first rotary drum is rotating,

wherein the first rotary drum includes a plurality of pixels formed ~~thereon~~ on a curved part of a surface of the drum, and each of the pixels is two-dimensionally arranged on the curved part and actuated independently to form[[s]] the electric field.

43. (Original) The method of Claim 42, further comprising:
rotating a second rotary drum on the opposite side of the first rotary drum,
wherein the second rotary drum rotates in a direction opposite to a direction in which the first rotary drum rotates, the electric field being formed between the first and the second rotary drums.

44. (Currently Amended) A method for writing a pattern on an electronic paper with an electric field, comprising:

providing an electronic paper;

applying a first electric field to the electronic paper, wherein the first electric field resets a pre-written pattern on the electronic paper; and

applying a second electric field to the electronic paper, wherein the second electric field writes a pattern on the electronic paper after the pre-written pattern is reset;

wherein a plurality of pixels two-dimensionally arranged form[[s]] at least one of the first and second electric fields, and each of the pixels are actuated independently to form[[s]] the electric field.

45. (Withdrawn) An electronic paper comprising:

a base layer;

an electronic ink layer provided on the base layer, the electronic ink layer including a binder with transparency; and

a main capsule body exhibiting light transmissivity;

a solvent enclosed in the main capsule body; and

a plurality of particles, which are electrically charged, being dispersed in the solvent.

46. (Withdrawn) The electronic paper of Claim 45, wherein the plurality of particles are colored and the color is different from that of the solvent.

47. (Withdrawn) The electronic paper of Claim 45, wherein a micro-capsule is formed by the main capsule, the solvent and the plurality of particles, the electronic paper further comprising a covering layer that covers the microcapsule.

48. (Withdrawn) The electronic paper of Claim 47, wherein a specific gravity of the plurality of particles is substantially equal to that of the solvent.

49. (Withdrawn) The electronic paper of Claim 48, wherein the covering layer has a certain thickness, the certain thickness making the specific gravity of the solvent and the plurality of particles substantially equal.

50. (Withdrawn) The electronic paper of Claim 47, comprising a plurality of the micro-capsules in the binder.